

Smarter user interfaces

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26 February 2015 / Indy UX Salon / Indianapolis, IN



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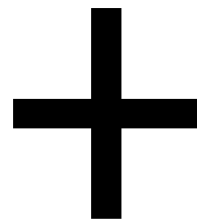
Or...

Longing for less obtrusive technology and what that means for UI designers.



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HERRON
SCHOOL
of ART
+
DESIGN



The gist...

How might visual
communication change in a
truly connected world?

First,

What's a “truly
connected world”?



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MINORITY
REPORT



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**Parks
Recreation**



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her

VERTU

HANDMADE IN ENGLAND

[STORE LOCATOR](#) [MY VERTU](#) [SHIP TO: UNITED STATES](#)

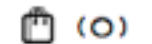
[COLLECTIONS](#)

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[SERVICES](#)

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THE
AME
RIC
ANS

Disclaimer

Privacy is always a concern.

Technology needs to come a long way.

Advertisers will abuse any system.



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http://www.renderspirit.com/images/2011/03/10_nodes.jpg?765bc7



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her



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Next Scheduled Subway To

6:09 PM



Manhattan

8 Avenue

3

Minutes



Brooklyn

Canarsie-Rockaway Parkway

2

Minutes

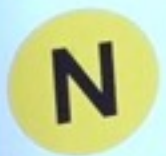


Queens

Astoria-Ditmars Boulevard

6

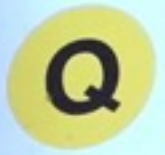
Minutes



Brooklyn

Coney Island - Stillwell

Arriving
Now

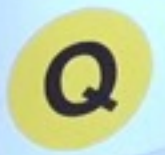


Queens

Astoria-Ditmars Boulevard

2

Minutes



Brooklyn

Coney Island-Stillwell Avenue

6

Minutes

Map & Directions



Service Alerts



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Brooklyn Bridge City Hall Station

4 5 6 J Z

Elevator at Centre St
& Chambers St

Enter with or buy MetroCard at
all times or see agent across
Park Row at Chambers St



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<http://new-york.miasta.org/wp-content/uploads/sites/9/2014/06/Brooklyn-Bridge-6.jpg>

Reading can be
hard for a lot of
people.

Especially those
with dyslexia.

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**Or color
blindness.**

**Or color
blindness.**



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Stress Recognition using Wearable Sensors and Mobile Phones

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Abstract— In this study, we aim to find physiological or behavioral markers for stress. We collected 5 days of data for 18 participants: a wrist sensor (accelerometer and skin conductance), mobile phone usage (call, short message service, location and screen on/off) and surveys (stress, mood, sleep, tiredness, general health, alcohol or caffeinated beverage intake and electronics usage). We applied correlation analysis to find statistically significant features associated with stress and used machine learning to classify whether the participants were stressed or not. In comparison to a baseline 87.5% accuracy using the surveys, our results showed over 75% accuracy in a binary classification using screen on, mobility, call or activity level information (some showed higher accuracy than the baseline). The correlation analysis showed that the higher-reported stress level was related to activity level, SMS and screen on/off patterns.

Keywords— stress, mobile phone, smart phone, wearable sensor, accelerometer, skin conductance, classification, machine learning

I. INTRODUCTION

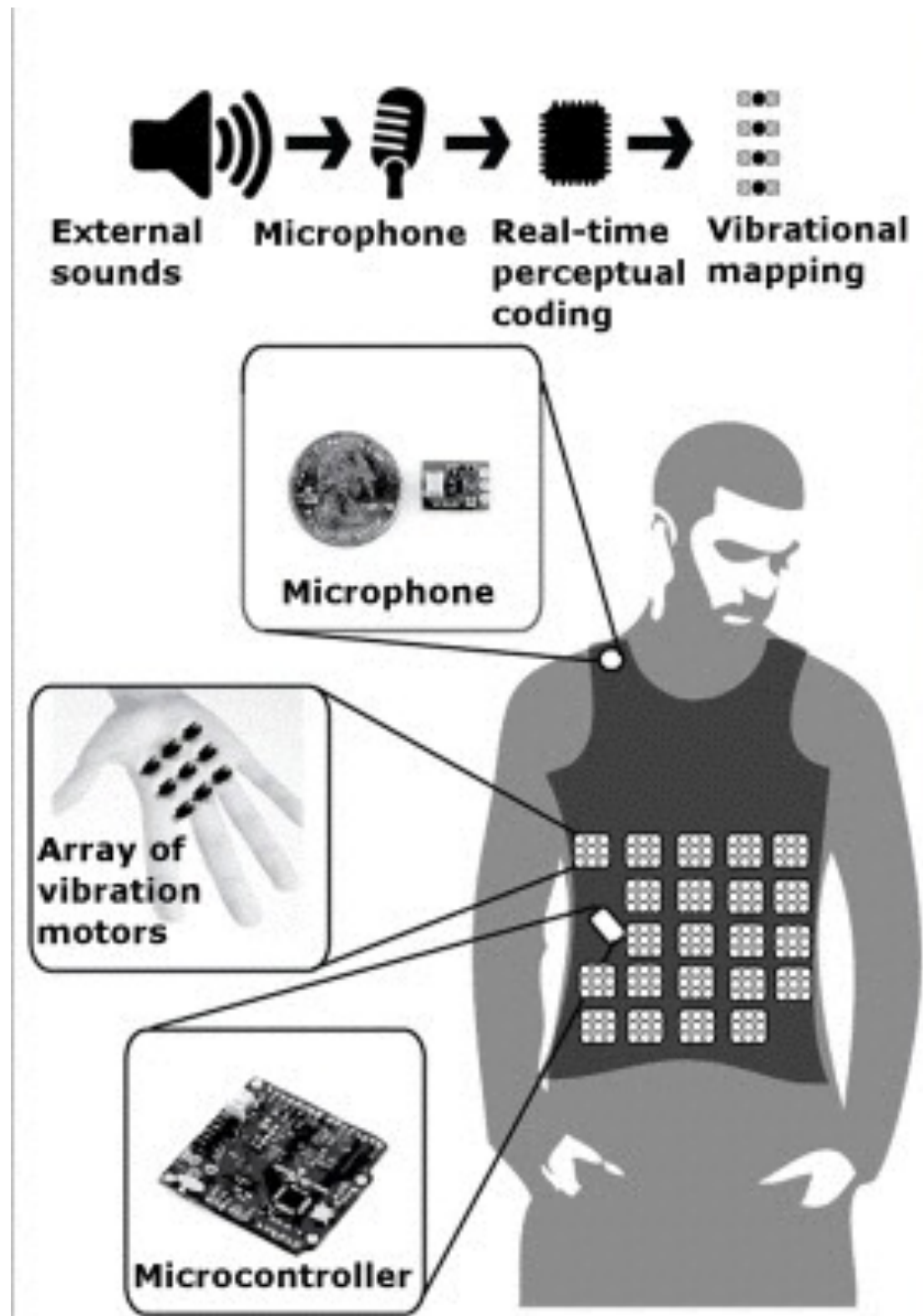
Stress is one of the major problems in modern society. Sometimes people are aware of being under stress, for example, when they are occupied with deadlines of homework and projects; however, long-term conditions with high stress can be chronic and people may be less likely to notice whether they

perceived emotional stress and high frequency component (0.15-0.5 Hz) of HRV [2]. Skin conductance has been considered as another biomarker for stress [8], where eccrine sweat activity that is controlled by only sympathetic nervous activity is measured. For example, Hernandez et al. discriminated stressful and non-stressful calls at the call center environment using SC features [3]. Setz et al. automatically classified SC responses from cognitive load and stress with accuracy higher than 80% [4]. This group also attempted to classify the same two conditions using seating pressure data and obtained over 70% accuracy [9]. Mokhayeri et al. used multi-modal physiological signals: pupil diameter, electrocardiogram and photoplethysmogram to classify stressed and relaxed conditions [7].

Other methods are based on surveys. For example, perceived stress has been used as an objective stress marker [10]. Questions in the perceived stress scale (PSS) assess what degree in each situation a subject feels stressful. The Holmes and Rahe Stress Scale counts up the events in the prior year that could lead to stress [11].

Today we have many wearable devices, such as mobile phones and wearable sensors to measure physiological or behavioral data in our daily lives. This paper aims to use technology to recognize stress levels using data from the



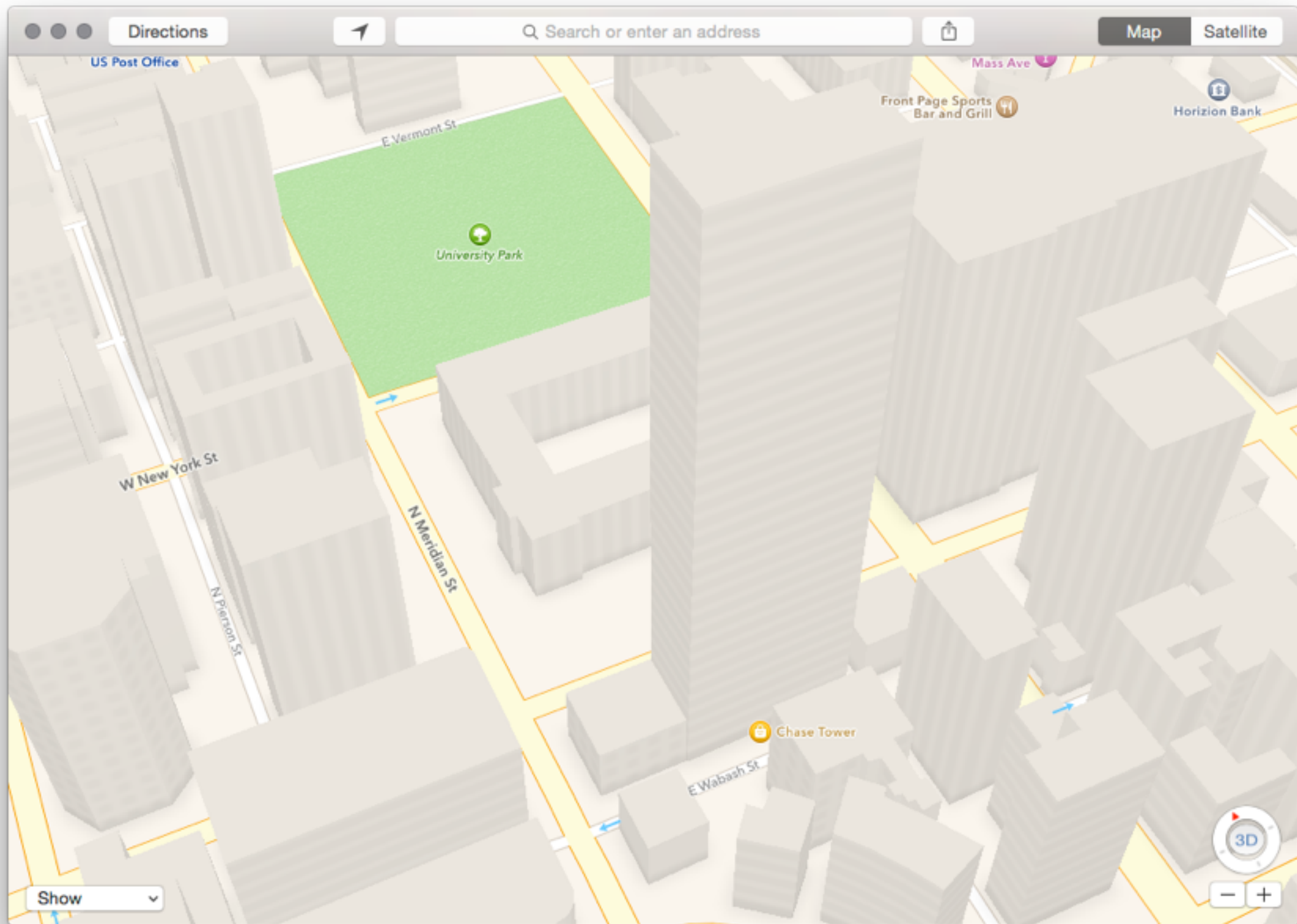


David Eagleman



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<http://www.eagleman.com/research/sensory-substitution>



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That's Aaron!

He likes hot dogs with cheddar cheese.

Yesterday, he went to a gallery opening and he said
“I really love this work”

Right now, he's walking to a scheduled meeting.

He's behind on blogging.

He's listened to *Run the Jewels 2* fifty times in the
last week.

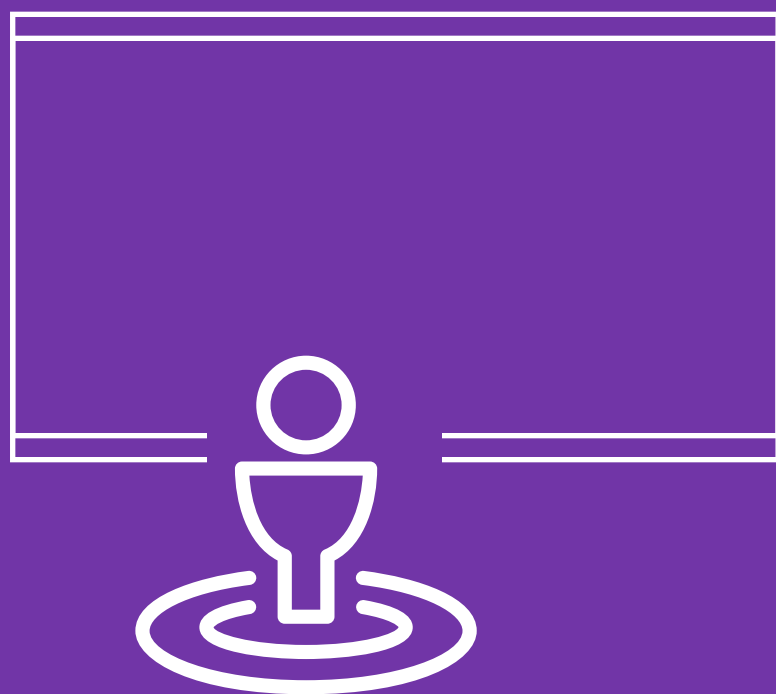
His favorite typeface is Helvetica.

He has had very little sleep this week.

Being lost makes him nervous.



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you want to see!**



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<http://www.oled-info.com/flexible-oled>



abc rtv 6



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<http://www.whathifi.com/news/bang-olufsen-introduces-beosound-moment-music-system-mood-control>

The ideal...

We just live our lives and
our surrounding adapt
accordingly.



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Design components for connected world

Humans as nodes

Constant monitoring of our activities

Customized content

Content in the cloud

Natural interactions (remove barriers)



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How does this effect UI design?

Need to start thinking about we communicate system-initiated communication with the person.

- ▶ *Linking/Connecting*
- ▶ *Identity/Privacy*
- ▶ *Reduce visual complexity/info-overload*





18:36

Transferência
Linha 1 Azul Jabaquara / Tucuruvi
Linha 4 Amarela Butantã

CPTM



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http://wearebreakingborders.com/wp-content/uploads/2014/11/IMG_2978.jpg



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http://www.essentialvermeer.com/dutch-painters/masters/images_masters/maes_d.jpg



Paula Differding

9 hrs ·



There is just something creepy about finding your Google search image is a birthday cake with a personal birthday greeting.

[+Paula](#) [Gmail](#) [Images](#)

[Like](#) · [Comment](#) · [Share](#)

Cool, now what?

A first stab at a
smarter interface.

Based on the work of Craig McDaniel and Jean Robertson

Spellbound: Rethinking the Alphabet



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A



B



C



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A



B



C



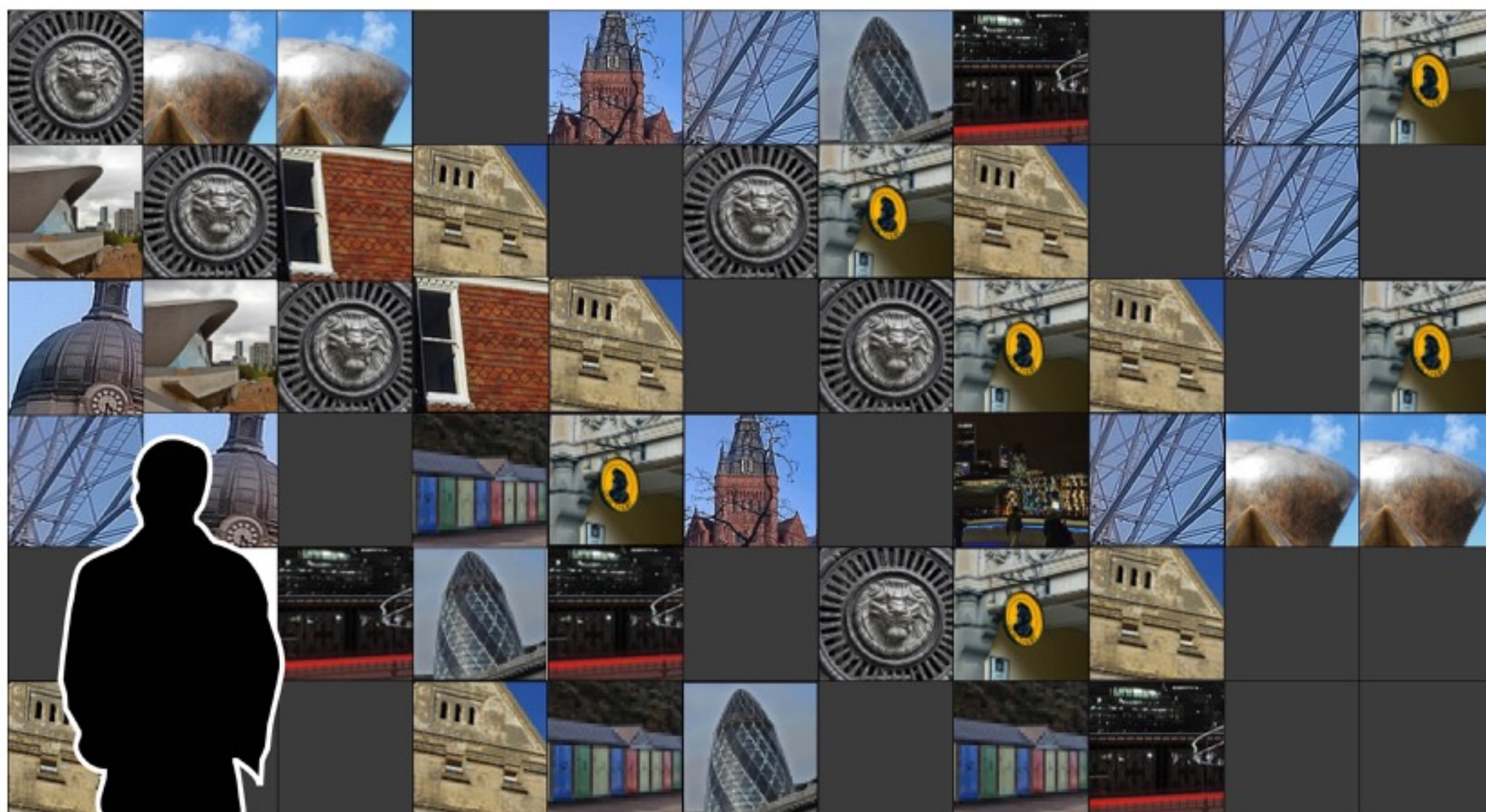
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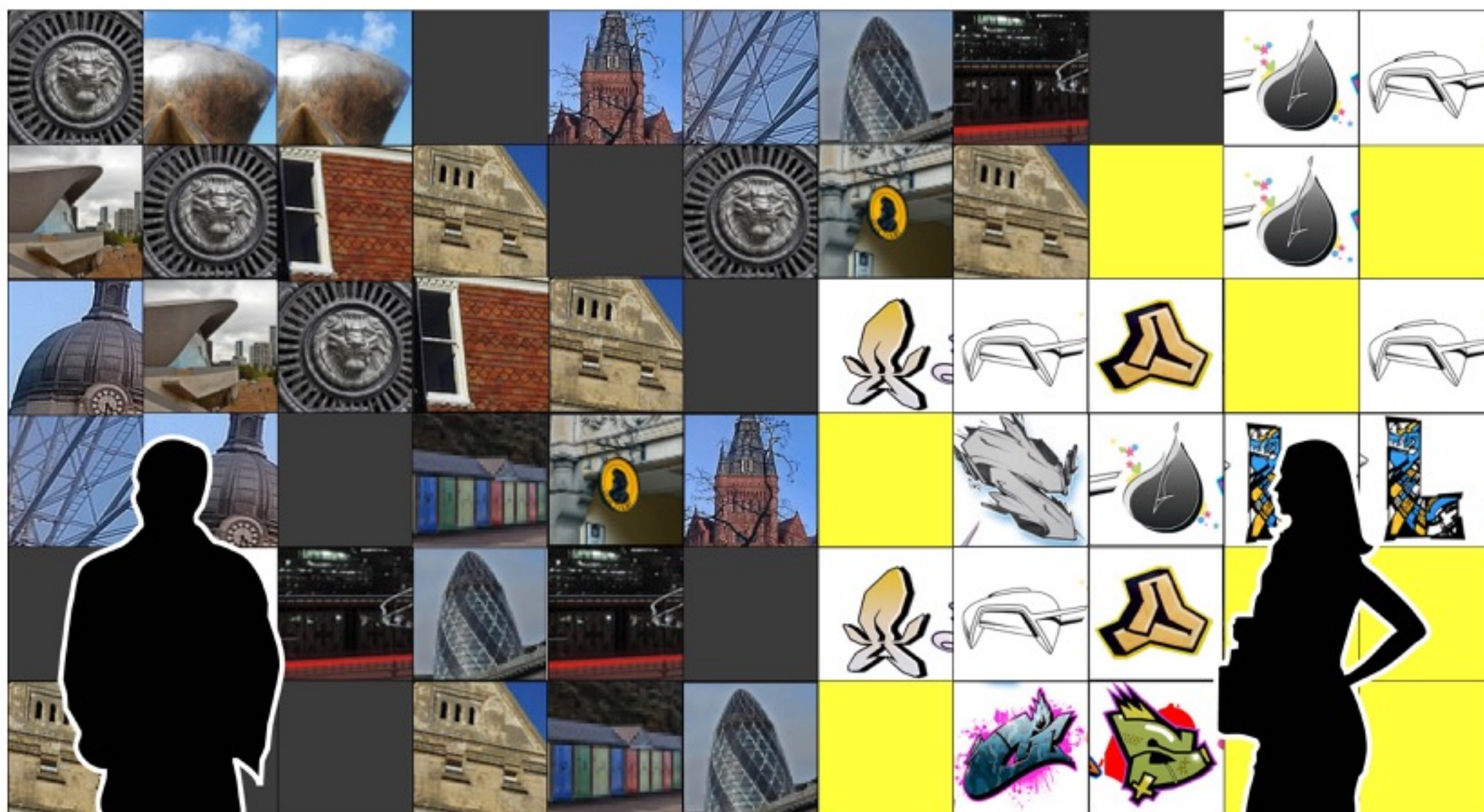
A	L	L		G	O	E	S		O	N
W	A	R	D		A	N	D		O	U
T	W	A	R	D		A	N	D		N
O	T	H	I	N	G		C	O	L	L
A		S	E	S		A	N	D		
T			D	I	E		I	S		



A	L	L		G	O	E	S		O	N
W	A	R	D		A	N	D		O	U
T	W	A	R	D		A	N	D		N
O	T	H	I	N	G		C	O	L	L
A		S	E	S		A	N	D		
T			D	I	E		I	S		







Design challenges

How do we know their alphabetic preference?

There are easy ways to have the user directly input their preference but I'm striving to make it easier than that.

How do we customize without direct input?

I need dev help! Contact me if you're interested!

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FUN ACTIVITY TIME



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Your turn!

Pick a random context and improve the experience with smarter visual communication...

- ▶ *First, think about the types of people in these spaces and the interactions that happen there.*
- ▶ *Anything can be a screen.*
- ▶ *Everything about you is sharable/recordable.*
- ▶ *Bandwidth is no longer an obstacle.*
- ▶ *Keep interactions as natural as possible.*



ganci.co/signup



Thank you!

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aaron.ganci@gmail.com